

TWO NEW ORIENTAL STEGELYTRINE LEAFHOPPER GENERA
(HEMIPTERA: CICADELLIDAE)

YALIN ZHANG, CONG WEI, AND M. D. WEBB

(YZ, CW) Key Laboratory of Plant Protection Resources and Pest Management of Ministry of Education, Entomological Museum, Northwest A & F University, Yangling, Shaanxi, 712100 China (e-mails: yalinzh@cnipm.com or yalinzh@nwsuaf.edu.cn; Weicong215@163.net); (MDW) Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: M.Webb@nhm.ac.uk). Corresponding author: Cong Wei

Abstract.—The following new stegelytrine leafhopper genera and species are described: *Stenolora* n. gen. with *S. malayana* n. sp. as its type species from peninsular Malaysia and *S. abbreviata* n. sp. from China; *Platyvalvata* n. gen. with *P. longicornis* n. sp. as its type species from Nepal and *P. dalatiensis* n. sp. from Vietnam.

Key Words: Hemiptera, Cicadellidae, Stegelytrinae, new genera, new species, Oriental Region

Stegelytrinae Baker is a small leafhopper subfamily from the Palaearctic and Oriental regions. The group is distinguished by the following combination of characters: eyes encroaching onto pronotum laterally in dorsal view (Figs. 1, 27, 29), lateral margin of face not or weakly incurved below eyes (Figs. 2, 26, 30), antennae arising low on face (Figs. 2, 26, 30); and forewing with crossvein between claval veins and between outer claval vein and claval suture (Figs. 3, 28, 31). By leafhopper standards, the Oriental stegelytrine genera are remarkably diverse and were either only recently placed in the subfamily, being unassigned by Oman et al. (1990), or have been recently described or revised (see Webb 1999; Wei and Zhang 2003; Zhang and Wei 2002; Zhang et al. 2002, 2004).

To help increase our knowledge of this little known group, we describe two new Oriental stegelytrine genera, *Stenolora* and *Platyvalvata*, together with two new species of each. The new genera form a distinct group with the other oriental stegelytrine genera, i.e., *Cyrta* Melichar, *Doda* Distant,

Kunasia Distant, *Placidus* Distant, *Placidellus* Evans, *Paraplacidellus* Zhang, Wei, and Shen, and *Temburocera* Webb based on their very much longer antennae. They also share some other characters with some but not all Oriental genera i.e., clypellus expanded with lora narrow (*Stenolora* and *Temburocera*); clypellus with two apical stout setae (*Stenolora*, *Doda*, and *Kunasia*); lateral frontal suture extending well beyond corresponding ocellus (*Platyvalvata*, *Cyrta*, *Placidus*, *Placidellus*, and *Paraplacidellus*); pronotum with lateral carina strongly curved dorsally adjacent to eye (all except *Temburocera*); scutellum with one or two posteromedial longitudinal keels (all except *Platyvalvata*, *Placidus*, and *Cyrta*); forewing appendix well developed and hind femur with extra subapical spines, elevated and mounted on strong bases (all except *Temburocera*).

Unlike the Palaearctic genera (*Stegelytra* Mulsant and Rey and *Wadkufia* Linnavuori) that occur on oaks (*Quercus*), the biology and host plants of Oriental Stegelytrinae are unknown. However, the male specimen of

Stenolora abbreviata n. sp. (described here) and other male Stegelytrinae (Zhang in prep.) were caught on an exposed river bed. A similar environment is used by male Lepidoptera and is connected to mineral uptake (Holloway 1984: 97), and in Cicadellidae the following observation (personal communication Chris Dietrich) was made in Peru: "large swarms, of leafhoppers were seen in a few places along streams and rivers; they were resting and feeding on the wet sand/mud. Every specimen was male and sweeping on the surrounding vegetation yielded no females and very few additional males. Taxa were mainly xylem feeding Cicadellinae (including the rare Phereurhinini), commonly referred to as sharp-shooters, which were shooting (excreting) profusely." Similarly, Stegelytrinae are rare in collections with many species known only from a single specimen, usually the male.

Material examined is deposited in the institutions abbreviated in the text as follows:

BMNH (The Natural History Museum, London).

BPBM (Bernice P. Bishop Museum, Honolulu, Hawaii).

IRSNB (Institute Royal des Science Naturelles de Belgique, Brussels).

***Stenolora* Zhang, Wei, and Webb,
new genus**

Type species.—*Stenolora malayana* Zhang, Wei, and Webb, n. sp.

Description.—Dark brown, head and thorax marked with yellow to whitish yellow; forewing with extensive hyaline patches.

Head small, distinctly narrower than pronotum, front margin rounded; eyes encroaching onto pronotum laterally. Vertex similar in length to basal width, sloping to front, shiny; coronal suture obscure. Face similar in length to width, shagreened; lateral margins very weakly insinuate below eyes; ocelli on anterior margin of vertex, situated approximately their own diameter from eye; clypeus narrow, with lateral mar-

gins subparallel below and above antennae; lateral frontal sutures extending to lateral margin of corresponding ocellus; transclypeal suture distinct; clypellus broad, depressed apically, lateral margins convex basally, broader basally than anteriorly, anterior margin slightly concave with a stout seta on each side of midline; rostrum extending to apex of trochanter; labrum half length of labium; gena somewhat longitudinally sulcate under antennae, rugose laterally; lora narrow; antennal ledge distinct; antenna long, arising adjacent to lower corner of eye. Pronotum about $2.5\times$ median length, posterior margin slightly concave, lateral margin long with carina present, sharply curved to eye anteriorly. Scutellum long, basal width similar to width of head, distal two-thirds with a longitudinal medial keel. Forewing with five apical cells, middle and outer subapical cells closed, inner subapical cell open; claval veins united by crossvein and a crossvein present between inner claval vein and claval suture; appendix moderately broad, extending to fourth apical cell; claval margin strongly elevated and crimped at apex. Legs densely setose; hind femur strongly broadened distally and slightly bowed with numerous apical setae, more distal setae elevated on strong bases; hind tibia moderately flattened and strongly bowed, several supernumeral setae present between anterodorsal and posterodorsal rows.

Male pygofer side longer than broad, with several macrosetae distally, hyaline band from ventral to dorsal margin anteriorly. Valve large, subquadrangular, articulated to pygofer. Xth segment short with a ventral process on each side. Subgenital plate short to moderately long, subtriangular, with few short to moderately long fine setae laterally. Connective somewhat T-shaped; stem very long; arms short with weakly sclerotized fused apical extensions. Paramere with inner basal apophysis short, outer basal apophysis elongate; lateral lobe prominent, crenulate; apical process elongate, evenly tapered to acute apex distally;

basal half swollen with a ventral heel and an inner tooth subbasally, crenulate ventrally, with a few fine setae ventrobasally. Aedeagus simple, shaft cylindrical, elongate, slightly curved dorsally in lateral view with apex bifurcate; gonopore apical; basal apodeme moderately long. Dorsal connective present between Xth segment and basal apodeme of aedeagus.

Etymology.—Named after the very narrow lora. The gender is feminine.

Remarks.—This genus is similar to *Tem-burocera* in having the clypellus broad and lora narrow but differs from this genus and other Stegelytrinae genera by the ventral processes of the male Xth segment.

***Stenolora malayana* Zhang, Wei, and Webb, new species**

(Figs. 1–15)

Description.—Length: ♂ 5.8 mm (x1). Dark brown marked with yellow, including an irregular transverse band between ocelli on vertex and across midlength of scutellum; pronotum with pale irroration.

Male genitalia with ventral processes of segment X falcate, swollen subapically and tapered to apex. Subgenital plate moderately long. Aedeagal shaft slightly expanded apically in lateral view, evenly tapering to bifurcate apex in posterior view.

Type material.—Holotype: ♂, Peninsular Malaysia, Pahang, Cameron Highlands, 24.vi.1936, H.M. Pendlebury (BMNH).

Etymology.—Named after the type locality.

Remarks.—This species differs from *S. abbreviata* by its slightly smaller size, slightly different pale markings on the thorax dorsally, and by the shape of the male genitalia (see remarks under *abbreviata*).

***Stenolora abbreviata* Zhang, Wei, and Webb, new species**

(Figs. 16–20)

Description.—Length: ♂, 6.5 mm (x1). Color similar to previous species but additionally with three whitish spots near each eye on pronotum (medial spot largest) and

markings on scutellum forming discreet spots rather than a transverse band.

Male genitalia with ventral processes of Xth segment falcate, evenly tapered to apex. Subgenital plate short with a group of apical moderately long setae. Style apical process extending to near apex of connective, slightly swollen subbasally; preapical angle narrow. Aedeagal shaft expanded apically in lateral view, narrow throughout length and slightly expanded toward bifurcate apex in posterior view.

Type material.—Holotype: ♂, China, Nangling Ruyuan, Guangdong, stream, 1,500 m., 9.v.2004, P. Grootaert (IRSNB).

Etymology.—Named after its short subgenital plate.

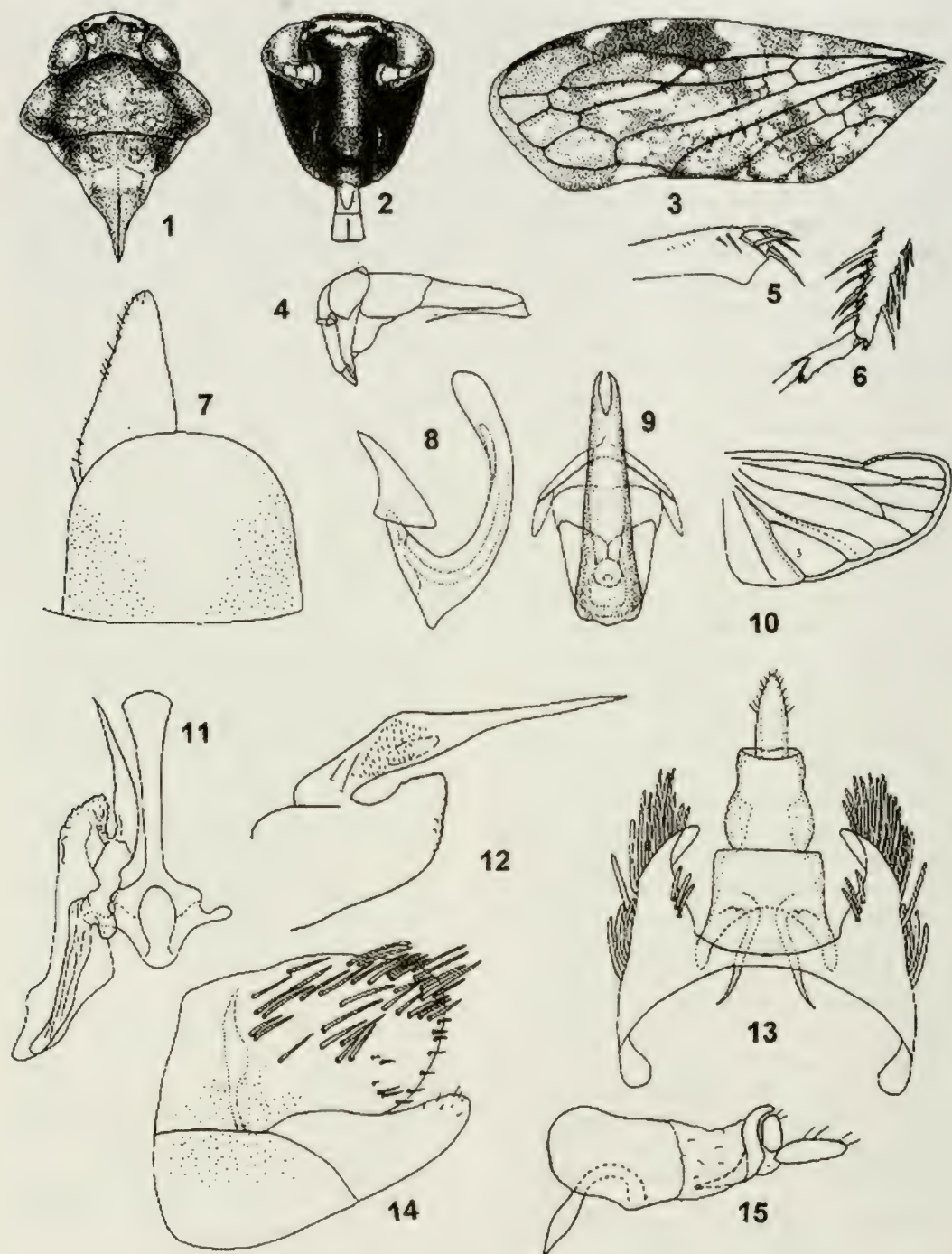
Remarks.—This species is similar to *S. malayana* but is slightly larger, has more discrete yellow markings on the thorax dorsally, and in the male genitalia, the subgenital plate is shorter with a group of moderately long apical setae, the processes of the Xth segment are more tapered distally, and the aedeagal shaft is more expanded apically in lateral view and narrower with gonopore shorter in posterior view.

***Platyvalvata* Zhang, Wei, and Webb, new genus**

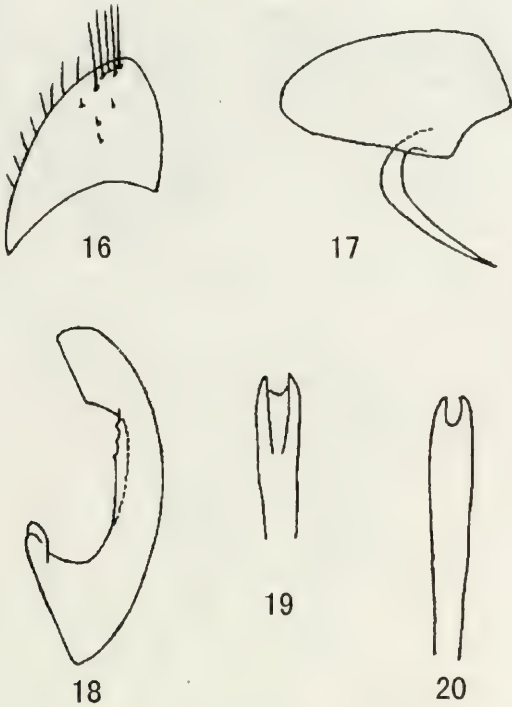
Type species.—*Platyvalvata longicornis* Zhang, Wei, and Webb, n. sp.

Description.—Yellow with reddish to brown markings.

Head small, distinctly narrower than pronotum, front margin rounded; eyes encroaching onto pronotum laterally; vertex slightly shorter medially than basal width; sloping to front, smooth, coronal suture extending to anterior margin; ocelli on anterior margin of vertex, situated approximately 3× their own diameter from corresponding eye; face similar in length to width, lateral margins weakly insinuate below eyes; clypeus smooth with lower area shagreened; lateral frontal suture extending well beyond lateral margin of corresponding ocellus; transclypeal suture distinct; clypellus strongly broadening anteriorly, lateral



Figs. 1-15. *Stenolora malayana*. 1, Head and thorax, dorsal view. 2, Face. 3, Forewing. 4, Head and thorax, lateral view. 5, Apex of hind femur, lateral view. 6, Apex of hind tibia and first hind tarsomere, lateral view. 7, Valve and left subgenital plate, ventral view. 8, Aedeagus, left lateral view. 9, Aedeagus, posterior view. 10, Hind wing. 11, Connective and right style, dorsal view. 12, Apex of right style, ventral view. 13, Male genital capsule and segment X, dorsal view. 14, Male genital capsule, left lateral view. 15, Male segment X, left lateral view.



Figs. 16–20. *Stenolora abbreviata*. 16, Subgenital plate, ventral view. 17, Male segment X, lateral view. 18, Aedeagus, left lateral view. 19, Aedeagus, anterior view. 20, Aedeagus, posterior view.

margins straight, anterior margin slightly concave medially; rostrum extending to apex of fore trochanter; labrum half length of labium; gena flat, rugose laterally; lora broad; antennal ledge absent; antenna long, extending beyond midlength of body, arising adjacent lower corner of eye. Pronotum about 2.5× broader than median length, smooth; lateral margin long, lateral carina present, sharply curved to eye anteriorly. Scutellum moderately long; basal width about as broad as head and slightly longer than lateral margin, depressed medially. Forewing with five apical cells, middle and outer subapical cells closed, inner subapical cell open; claval veins united by crossvein and a crossvein present between inner claval vein and claval suture; appendix moderately broad extending to fourth apical cell; claval margin slightly elevated, crimped at apex. Legs densely setose; hind

femur strongly broadened distally and slightly bowed with numerous apical setae, more distal setae elevated on strong bases; hind tibia moderately flattened and strongly bowed, several supernumeral setae present between anterodorsal and posterodorsal rows.

Male pygofer side longer than broad with several macrosetae distally; a lateral finger-like process dorsally, adjacent base of Xth segment. Xth segment large with a latero-ventral folded area, crenulated distally. Valve very large, subquadrangular, articulated with pygofer. Subgenital plate moderately long, subtriangular, with a few short to moderately long stout setae ventrally. Connective large, T-shaped; stem sclerotized medially, hyaline laterally; a ventral winglike expansion distally on each side; arms short. Paramere with inner basal apophysis very short, outer apophysis elongate; lateral lobe prominent with a few spinelike setae adjacent to apical process; apical process elongate, straight, tapering to acute apex; ventral margin crenulate over basal half and with a tooth at midlength. Aedeagus simple, shaft elongate, cylindrical, strongly curved dorsally and cephalad, anterodorsal margin with a series of blunt teeth over basal two-thirds; gonopore indistinct; basal apodeme short. Dorsal connective present between Xth segment and basal apodeme of aedeagus.

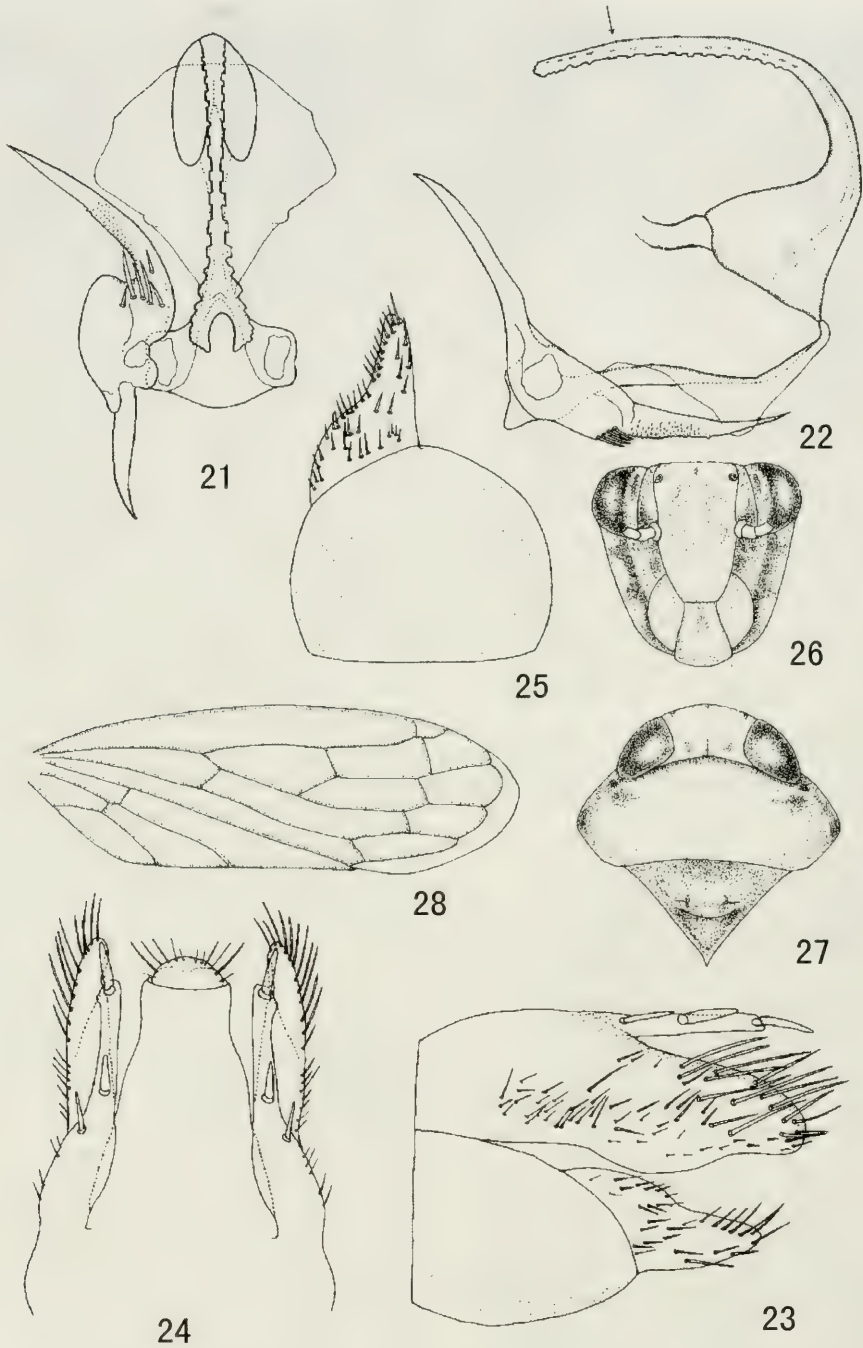
Etymology.—Named after the very broad male Xth sternite or valve. The gender is feminine.

Remarks.—This genus forms a group with *Cyrta*, *Placidus*, *Placidellus*, and *Paraplacidellus*, in having the lateral frontal sutures extending well beyond their corresponding ocellus. It differs from these and other stegelytrine genera in the dorsal processes of the male pygofer and lateral winglike expansions of the connective.

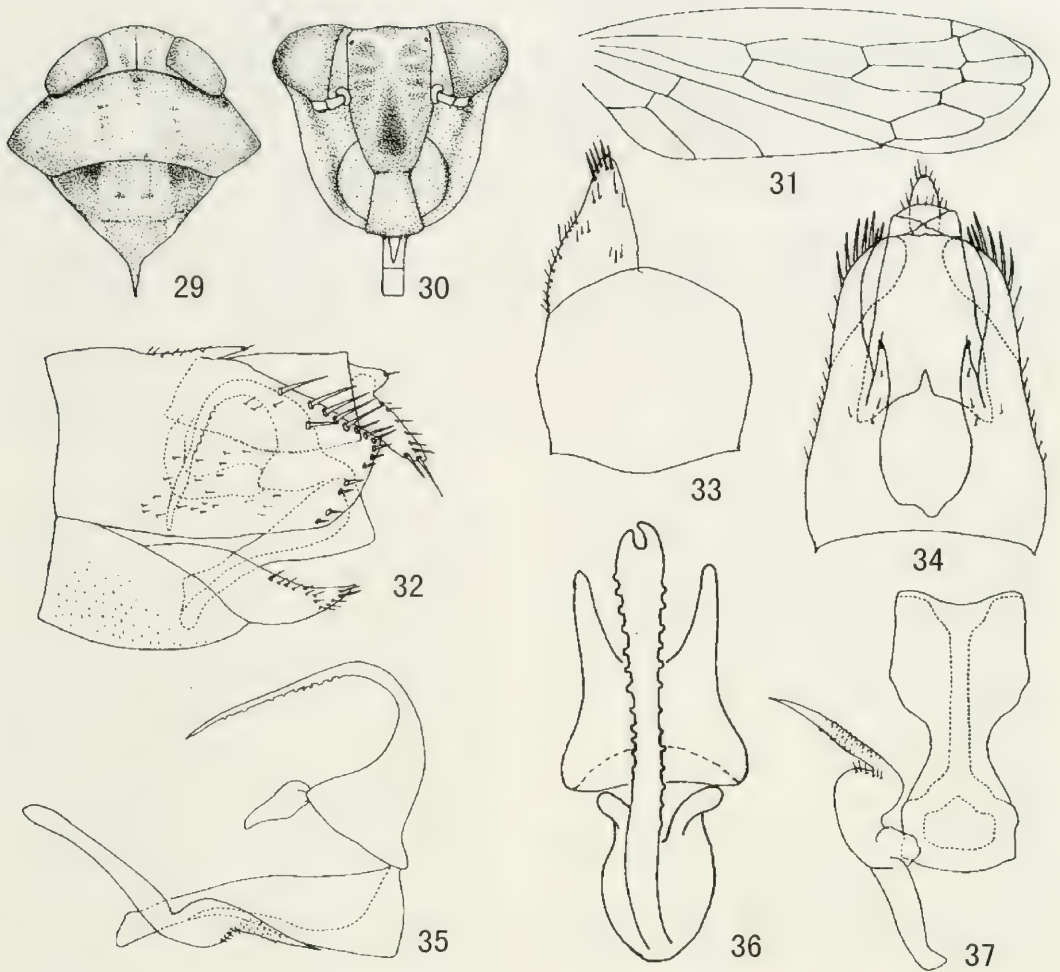
***Platyvalvata longicornis* Zhang, Wei,
and Webb, new species**

(Figs. 21–28)

Description.—Length: ♂ 6.8 mm (x1). Generally pale yellow; transclypeal suture,



Figs. 21–28. *Platyalvata longicornis*. 21, Connective, paramere and aedeagus, in view of arrow in Fig. 22. 22, Connective, paramere and aedeagus, lateral view. 23, Genital capsule, lateral view. 24, Genital capsule and anal segment, dorsal view. 25, Valve and subgenital plate, ventral view. 26, Face. 27, Head and thorax, dorsal view. 28, Tegmen.



Figs. 29–37. *Platyalvata dalatiensis*. 29, Head and thorax, dorsal view. 30, Face. 31, Right tegmen. 32, Genital capsule, lateral view. 33, Valve and subgenital plate, ventral view. 34, Genital capsule and anal segment, dorsal view. 35, Connective, pramere and aedeagus, dorsal view. 36, Aedeagus, dorsal view. 37, Connective and paramere, dorsal view.

a medial spot subbasally on clypellus, gena and sublaterally on femur, marked with brown; vertex touched with red at base and apex of coronal suture and each side of coronal suture subbasally; clypeus with several indistinct reddish transverse bars and a dark yellowish spot subbasally centrally; pronotum touched with red adjacent eyes and with two faint longitudinal bands medially and scutellum with a pair of reddish spots subbasally.

Pygofer side elongate, dorsal process long and stout, bearing three macrosetae.

Aedeagal shaft elongate, expanded and bifurcate apically in dorsal view, anterolateral margin strongly dentate over distal two-thirds.

Type material.—Holotype: ♂, Nepal, Department of Agriculture. CIE. A. 3083 (BMNH).

Etymology.—Named after the long pygofer process.

Remarks.—This species differs from *P. dalatiensis* in its paler color, longer pygofer process, and broader apex of the aedeagal shaft in dorsal view. The type is in poor

condition, and its markings may be paler than in fresh specimens.

Platyvalvata dalatiensis Zhang, Wei, and Webb, new species
(Figs. 29–37)

Description.—Length: ♂, 6.5 mm (x1). Generally sordid yellow; anterior margin of head with a nearly V-shaped whitish band between ocelli. Vertex with two brown spots subbasally; clypeus generally yellowish brown with a medial large dark brown patch ventrally and several indistinct reddish transverse bars laterally. Pronotum touched with red laterally adjacent to eye and with a series of small blackish spots on midline basally. Scutellum yellowish brown with laterobasal area with a pair of small spots slightly basad of transverse suture dark brown. Venter generally yellowish brown with prosternum and femora heavily marked with dark brown.

Fifth apical cell of left forewing indistinct.

Pygofer process weakly developed and bearing a few fine setae. Aedeagal shaft in dorsal view slightly sinuate basally with apex slightly expanded and bifurcate in dorsal view; apex flattened in lateral view, anterolateral margin strongly dentate over distal two-thirds.

Type material.—Holotype ♂, Vietnam, 15 km NW of Dalat, 1,850 m, 5.v.1960; L.W. Quate (BPBM).

Etymology.—Named after its type locality.

Remarks.—This species differs from *P. longicornis* in having the clypeus generally dark ochre with a nearly V-shaped white band basally and a large central blackish-ochre patch ventrally, the male pygofer process much shorter, and the aedeagal shaft in dorsal view slightly sinuate basally and less expanded apically.

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LITERATURE CITED

- Holloway, J. D. 1984. Notes on the Butterflies of the Gunong Mulu National Park, pp. 89–131. In Jermy, A. C. and K. P. Kavanagh, eds. Gunong Mulu National Park, Sarawak. An Account of its Environmental and Biota being the Results of The Royal Geographical Society/Sarawak Government Expedition and Survey 1977–1978 Part II. The Sarawak Museum Journal 30, Special Issue 2.
- Oman, P. W., W. J. Knight, and M. W. Nielson. 1990. Leafhoppers (Cicadellidae) A Bibliography, Generic Check-list and Index to the World Literature 1956–1985. CAB International Institute of Entomology, Wallingford, England, 368 pp.
- Webb, M. D. 1999. Identity of *Bythoscopus ignicans* Walker, 1857 (Hemiptera: Auchenorrhyncha: Cicadomorpha: Cicadellidae: Stegelytrinae). *Reichenbachia* 33 (14): 111–114.
- Wei, C. and Y. Zhang. 2003. A new species of the genus *Placidus* (Homoptera: Cicadellidae: Stegelytrinae) from Nepal. *Entomotaxonomia* 25(4): 91–94.
- Zhang, Y. and C. Wei. 2002. Study on the Oriental leafhopper genus *Kunasia* Distant (Homoptera: Cicadellidae). *Entomotaxonomia* 24(2): 83–88.
- Zhang, Y., M. D. Webb, and C. Wei. 2004. The Oriental leafhopper genus *Doda* Distant (Auchenorrhyncha: Cicadellidae). *Systematics and Biodiversity* 1(3): 301–303.
- Zhang, Y., C. Wei, and L. Shen. 2002. A new species of *Placidellus* Evans and a related new genus (Homoptera: Cicadellidae). *Entomotaxonomia* 24(4): 239–244.
- Zhang, Y., C. Wei, and G. Sun. 2002. A systematic study on the genus *Cyrtia* Melichar (Homoptera: Cicadellidae). *Entomotaxonomia* 24(1):27–44 (in Chinese with English summary).